

Effect of COVID-19 pandemic on health perception, depression, anxiety and stress levels in Turkish society

Depression, anxiety and stress in pandemic

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Abstract

Aim: The purpose of this study was to evaluate the health perception, depression, anxiety and stress levels in Turkish society during the COVID-19 pandemic, and to examine the factors affecting.

Material and Methods: In this study, which was planned as a cross-sectional analytical study, individuals were reached through social media using the snow-ball sampling method. Health Perception Scale (HPS), Depression, Anxiety and Stress Scale (DASS), Perceived Stress Scale (PSS) was applied. The study was completed with 440 people.

Result: As the level of education increased, health perception scores also increased ($p=0.049$). There was a significant relationship between regular nutrition, exercise and self-devotion and perception of health ($p<0.001$, $p<0.001$, $p=0.001$). The total score of DASS was found to be statistically significantly higher in participants with COVID disease in the first degree ($p=0.044$). DASS depression subscale scores were statistically higher in singles than married. PSS levels were higher in the participants under the age of 40 ($p=0.002$), in women ($p<0.001$), in singles ($p<0.001$) and in those who did not have children ($p<0.001$).

Discussion: In this study, during the COVID-19 outbreak in the society, it was found that the participants had high levels of depression, anxiety and stress and low perception of health. Priority might therefore be attached to these in future psychiatric planning. Psychological interventions for prevention and treatment are necessary to reduce the psychological effects of the pandemic.

Keywords

COVID-19; Pandemic; Health perception; Depression; Anxiety; Stress

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Introduction

The new coronavirus disease (COVID-19), which occurred in Wuhan, Hubei Province, China in December 2019, began to spread all over the world in early 2020. The COVID-19 outbreak was declared as a controllable pandemic by the World Health Organization (WHO) [1]. The disease continues to spread rapidly worldwide, with the first confirmed COVID-19 case reported on 11 March 2020 and the first deaths were announced on 17 March 2020 in Turkey. The Turkish government has taken various restriction measures, such as maintaining social distancing, travel bans for visitors from high-risk countries, the quarantine for citizens returning from these countries and closure of schools, shops and entertainment venues. This rapid increase in confirmed cases and deaths in the COVID-19 pandemic has created some psychological effects, such as stress, anxiety, and depression in both the medical staff and the general population.

The WHO has defined health as not only as the absence of illness and disability, but also as physical, mental and social well-being. This definition emphasizes that health is multi-dimensional, not one-dimensional, and addresses health with a holistic approach. The serious and fatal progressive diseases disrupt the balance of individuals, change a person's plans for the future, the flow of daily life, and ultimately cause severe problems. These problems can range from disease adaptation efforts to clinical level mental disorders. Stress can negatively affect all aspects of human life, normal functions of individuals, and long-term exposure to stress also causes different health problems in people and negatively affects the quality of life [2]. While people are afraid that they and their relatives will be sick and die during this COVID-19 pandemic process, they also experience material and moral difficulties caused by the pandemic. In addition to fear of illness and death, staying under house arrest at the age of 65 and older, the closure of many workplaces, the social distance and other pandemic rules increase the depression and anxiety levels of the people and also affect the perceived stress level negatively [3].

The present study aimed to evaluate the stress state, anxiety and depression levels and health perceptions of the society trying to cope with this situation during the COVID-19 pandemic that is still ongoing in our country.

Material and Methods

Type, place and scope of the research

In this study, which was planned as a cross-sectional analytical study, individuals were reached through the internet, social media and communication networks using the snowball sampling method. It was aimed to include 377 people with a 5% margin of error, a 95% confidence interval, and at least 420 people were planned in the study due to the possibility of missing survey questions and refusal to participate in the study. The study sample was composed of 440 adult participants.

Ethical Permit for the Study

Ethical permission for the research was taken prior to the study from Necmettin Erbakan University Meram Faculty of Medicine, Department of Pharmaceuticals and Non-Medical Research Ethics Committee. (number 2020/2491). The study protocol was approved by the Turkish Ministry of Health,

General Directorate of Health Services (Approval Date/ Number: 03.05.2020/51_34). The participants were informed about the study and their written consent was obtained according to the principles of the Helsinki Declaration.

Data Collection Tools

The data were gathered online due to restrictions on face-to-face encounters with the participants because of the COVID-19 outbreak. After the approval of the ethics committee for the study was received, announcements were made with different social networks, the purpose of the study was explained and volunteers were asked to fill out a questionnaire at the given link. After applying the questionnaire form as a pilot for 10 individuals, problems with the comprehensibility and applicability of the questionnaire were corrected and this collected data were not used in the main study. The questionnaire created with Google forms was prepared anonymously and participants' consent was requested. The first part of the four-part questionnaire included questions prepared for determining the socio-demographic characteristics of the participants, their daily lives and questions about the COVID-19 pandemic. The Health Perception Scale (HPS) was applied in the second part, the Depression, Anxiety and Stress Scale (DASS) in the third part, and the Perceived Stress Scale (PSS) in the fourth part.

Sociodemographic Information Form

The questionnaire with information about the participant was prepared by the researchers by scanning the relevant literature. The form consists of 20 questions about the COVID-19 pandemic as well as questions regarding age, gender, marital status, education level, regular nutrition and physical activities.

Health Perception Scale (HPS)

Health Perception Scale was developed in 2007 by Diamond et al. [4]. The scale consists of 15 items and it has 4 sub-dimensions: control center, precision, the importance of health and self-awareness. The answers are of the 5-point Likert type. Items 1, 5, 9, 10, 11 and 14 are positive, while items 2, 3, 4, 6, 7, 8, 12, 13 and 15 are negative. Turkish validity and reliability study of the test was done by Kadioğlu and Yıldız [5].

Perceived Stress Scale (PSS)

The PSS scale was developed in 1983 by Cohen et al. [6]. The scale was used to measure the perceived stress level of the participants, the Turkish validity and reliability study of the test was done by Eskin [7]. The PSS scale consists of 14 items and is designed to measure how people perceive certain situations in their lives. The scale was prepared in a 5-point Likert type with 0: "Never" and 4: "Very often". It has 2 sub-dimensions as 'Insufficient Self-Efficacy Perception' and 'Stress / Disturbance Perception'. A high score obtained from the questionnaire indicates the excessive perception of stress.

Depression, Anxiety and Stress Scale (DASS)

This scale was developed by Lovibond, and the Turkish validity and reliability study of the test was done by Yıldırım [8,9]. The scale, which was previously made up of 42 items, has been shortened to 21 items, 7 of which measure depression, 7 measure anxiety, and 7 measure stress levels. In the scale directive, participants are asked to answer questions according to their situation over the past week. Depression Anxiety Stress Scale is a 4-point Likert-type scale and items are evaluated between 0 and 3 (0 = not suitable for me at all, 1 = suitable

for me, 2 = generally suitable for me, 3 = completely suitable for me). High scores on each of the depression, anxiety and stress dimensions indicate that these problems are high in an individual.

Statistical analysis

All the data obtained with the program were obtained through Google forms (available at: https://docs.google.com/forms/d/e/1FAIpQLScXA9G5vg5HqfmpUNbQRHSFLHbumgp4WgH6r_H48dsZEg-X3w/viewform?usp=sf_link) that were obtained in the study using internet and social media networks. Average, standard deviation values of numerical data were calculated. Compliance with normal distribution was evaluated with the Kolmogorov-Smirnov test. Those not in normal distribution were compared with appropriate statistical analyzes such as Kruskal-Wallis in binary groups and Mann-Whitney U in groups 3 and more. Reliability scores for each scale were calculated with Cronbach's alpha. Pearson's correlation analysis was used to determine the relationship between depression, anxiety and stress levels. Cronbach's alpha coefficients of the scales and sub-dimensions used in the study were calculated. A p- value <0.05 was considered statistically significant.

Results

Among 440 people included in the study, 57.3% (n = 252) were female, 42.7% were male, and the average age was 40.58 ± 13.7 years; 69.5% (n=306) of the participants were married, 70.9% (n=312) have children, 37.5% (n=165) civil servants and 78.0% (n=343) were determined to be a university graduate, 72.3% (n=318) of the individuals did not have any chronic diseases, 76.8% (n=338) were eating regularly, only 14.3% (n=63) exercised for more than 150 minutes per week.

In the pandemic period, the mean total score of the individuals on the HPS was 51.15±6.4 (29-69) points. While the perception of health did not change with age, gender and marital status, a statistically significant relationship was found between education level and perception of health (p=0.049). As the education level increased, health perception scores also increased. There was a significant relationship between regular nutrition, exercise and self-devotion and perception of health (p<0.001, p<0.001, p=0.001, respectively) (Tables 1, 2).

The mean overall score of the study participants on the DASS scale was 15.5±12.1 (0-63) points, the score for the depression sub-dimension was 5.7±4.5 (0-21) points, the score for anxiety sub-dimension was 4.0±3.9 (0-21) points and the stress sub-dimension score was 5.9±4.4 (0-21). A significant relation was found between the total DASS score and gender (p=0.030). In particular, the stress subscale scores were statistically higher in women (6.2±4.3) than men (5.3±4.4). Similarly, a significant correlation was found between the total DASS score and marital status (p=0.020). Particularly, depression subscale scores were statistically higher in singles (6.9±4.9) than married (5.0±4.2). The total DASS scores were found to be higher in those who did not eat regularly and did not devote enough time for themselves. In this pandemic period, the total DASS score of the participants whose close relatives were infected with COVID 19 was statistically significantly higher (p=0.044). During this pandemic period, depression (10.6±5.5), anxiety (8.6±5.5) and stress (11.3±5.4) subscale scores were significantly higher in

smokers than non-smokers (p<0.001) (Table 1,2).

The mean total PSS score of the participants was 24.3±7.4 (1-47). A statistically significant relationship was found between the total PSS score and age, gender, marital status and childbearing. The perceived stress levels were higher in the participants under the age of 40 (p=0.002), women (p<0.001), singles (p<0.001) and no children (p<0.001). Similarly, the perceived stress level was higher in those who did not eat regularly (p<0.001), who did not exercise regularly and adequately (p=0.001) and who did not take time (p<0.001).

Table 1. Comparison of surveys with demographic features (1)

	HPS total score	DASS total score	PSS total score
	Median (Min-Max)	Median (Min-Max)	Median (Min-Max)
Age			
<40 years old	51(38-67)	14(0-63)	26(4-47)
≥40 years old	51(29-69)	12.5(0-50)	24(1-44)
p value	0.395	0.308	0.002
Gender			
Female	50(33-69)	14(0-61)	14(0-61)
Male	52(29-67)	12(0-63)	12(0-63)
p value	0.062	0.030	<0.001
Marital status			
Married	51(29-69)	12(0-60)	24.5(1-44)
Single	51(38-66)	15(0-63)	27(8-47)
p value	0.457	0.020	<0.001
Educational status			
Primary school (a)	48(29-61)	10.5(4-28)	26(8-37)
Secondary School (b)	48(33-62)	13(5-35)	24(11-43)
High school (c)	50(31-65)	15(0-44)	26(10-39)
University (d)	51(36-69)	13(0-63)	25(1-47)
p value	0.049 ^{ad}	0.238	0.736
Having children			
Yes	50(29-69)	13(0-60)	25(2-44)
No	52(38-66)	14(0-63)	26(1-47)
p value	0.029	0.035	<0.001
Diagnosed chronic disease			
Yes	51(29-67)	13(0-61)	25(1-47)
No	51(31-69)	13(0-63)	25(2-44)
p value	0.737	0.692	0.877
Do you eat regularly?			
Yes	52(29-69)	12(0-63)	24(1-44)
No	46.5(33-65)	22(4-48)	28.5(11-47)
Sometimes	49 (36-62)	15(0-61)	27(11-46)
p value	<0.001 ^{ab}	<0.001 ^{ab}	<0.001 ^{ab}
Do you exercise regularly?			
No	50(33-66)	13(0-61)	25.5(1-47)
< 150min per week	51(29-66)	14(0-63)	25(2-44)
> 150min per week	54(38-69)	10(0-44)	20(4-39)
p value	<0.001 ^{ac}	0.138	0.001 ^{ac}
Do you spare yourself enough time?			
Yes	52(37-69)	11(0-63)	23(1-40)
No	49(31-66)	16(0-50)	26(2-44)
Sometimes	51(29-65)	14(0-61)	26(8-47)
p value	0.001	0.003	<0.001

HPS: Health Perception Scale, DASS: Depression, Anxiety and Stress Scale, PSS: Perceived Stress Scale

Table 2. Comparison of surveys with demographic features (2)

	HPS total score	DASS total score	PSS total score
	Median (Min-Max)	Median (Min-Max)	Median (Min-Max)
Did your first degree relatives have a positive COVID-19 test during this pandemic period?			
Yes	48(43-57)	34(0-39)	27(20-33)
No	51(29-69)	13(0-63)	25(1-47)
p value	0.191	0.044	0.147
Have you or your family members lived in different addresses due to the COVID-19 pandemic?			
Yes	51(40-63)	15(0-61)	25(2-46)
No	51(29-69)	13(0-63)	25(1-47)
p value	0.473	0.229	0.368
Is the anxiety/stress associated with the COVID-19 high in your family members?			
Yes	50(38-66)	17(0-61)	26(8-47)
No	52(31-69)	7(0-63)	20.5(2-43)
Sometimes	50(29-66)	13(0-48)	25(1-44)
p value	0.092	<0.001	<0.001
Do you smoke?			
I'm smoking	49(29-67)	15(0-61)	26(1-46)
I do not smoke	51(31-66)	12(0-63)	25(4-47)
I quit smoking	49(33-69)	16(0-47)	25.5(2-44)
p value	0.082	0.230	0.104
If your answer is yes, in this period.....			
The number of cigarettes increased	49(39-61)	34(2-61)	28(11-46)
The number of cigarettes is the same	51(40-61)	12(0-49)	25(1-35)
The number of cigarettes decreased	48.5(29-67)	16.5(0-42)	26(4-41)
p value	0.453	<0.001	0.001

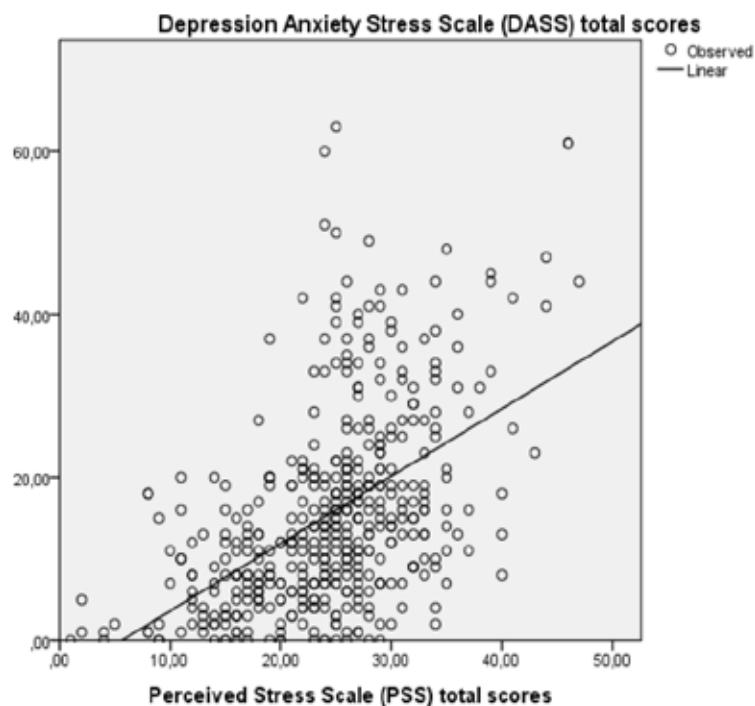
HPS: Health Perception Scale, DASS: Depression, Anxiety and Stress Scale, PSS: Perceived Stress Scale

Table 3. Correlations between age, HPS, DASS and PSS

	1	2	3	4	
1. Age (year)	r	1			
	p				
2. HPS total score	r	-0.058	1		
	p	0.226			
3. DASS total score	r	-0.123**	-0.280**	1	
	p	0.010	0.000		
4. PSS total score	r	-0.223**	-0.310**	0.509**	1
	p	0.000	0.000	0.000	

HPS: Health Perception Scale, DASS: Depression, Anxiety and Stress Scale, PSS: Perceived Stress Scale

In this period, individuals who smoked and increased the number of cigarettes smoked daily were found to have a higher DASS score ($p < 0.001$) and PSS scores ($p = 0.001$) (Tables 1, 2). When the correlations between HPS, DASS, PSS and age were examined, there was a weak statistically significant correlation between DASS and PSS scores, and age and HPS ($r = -0.123$, $p = 0.010$) ($r = -0.222$, $p < 0.001$). There was a moderately significant positive correlation between DASS and PSS ($r = 0.509$, $p < 0.001$) (Table 3). When a linear regression analysis was performed between the DASS total score and the PSS, 25.9% of the height in the total DASS was attributed to the total score received from the PSS ($R^2 = 0.259$), ($p < 0.001$) (Figure 1).



$R^2 = 0.259$, $p < 0.001$

Figure 1. Linear regression analysis between DASS scores and PSS scores.

Discussion

Infectious disease outbreaks in recent years have had a significant impact not only on physical health, but also on the psychological well-being of communities. Severe acute respiratory syndrome (SARS) epidemic in 2002/2003, H1N1 influenza pandemic in 2009, Middle East respiratory syndrome (MERS) epidemic in 2012, and 2019 (COVID-19) pandemic has made history as important infectious diseases that affect all countries of the world today. Beyond medical risk, the pandemic has great psychological and social effects on society, and it is difficult to accurately predict their consequences [10,11]. In this study, which was carried out to better understand the psychological effect, anxiety, depression and stress levels of the COVID-19 outbreak in the society, it was found that the participants had high levels of depression, anxiety and stress and low perception of health. Researches in China, the first country affected by the pandemic, show that the fear of unknown and uncertainty in COVID-19 leads to the development of negative behaviors such as stress, anxiety, depression, somatization, and increased alcohol and tobacco consumption [12,13]. In a study conducted in the Turkish community during the COVID-19 outbreak, female gender, urban life, and a history of psychiatric disease were risk factors for anxiety, urban life was a risk factor for depression, female gender, having a comorbid disease and mental disease history were risk factors for the health perception [14]. The COVID-19 pandemic has caused a major global health crisis and has brought significant psychological burdens to individuals with large-scale behavioral changes [15]. Making the right decisions in relation to people's health depends on the perception of the benefits of their choice for themselves and society [4]. Emotions often drive more perceptions of health than facts. Preserving health (primary prevention) through

healthy lifestyle behaviors is an important step in establishing a healthy society. In the study presented, the level of health perception of individuals increased as the level of education increased. As the level of education increases, it is expected that people will have information about what they need to do to maintain their current health and raise it to a better level. However, a significant relation was found between regular nutrition, exercise and time spent on oneself, and health perception. Similarly, in studies conducted during the pandemic period, the perceived health status was low in those with low education level, low income level, and those without regular eating and physical activity habits [12,16].

In a study involving more than 50,000 people during the COVID-19 outbreak, one-third of the participants were shown to experience psychological distress [13]. Some researchers in China found that half of the population was psychologically affected by the epidemic in the first stage of the COVID-19 outbreak. They reported that when using DASS-21, there were 16.5% of moderate to severe depressive symptoms and 28.8% of moderate to severe anxiety symptoms [17].

Depression is basically a disease of unhappiness and disbelief, and people feel sad, pessimistic and reluctant. The self-confidence of the person with depression decreases, they are unable to gather their attention, forgetfulness, thoughtfulness, insomnia, and difficulties in making simple decisions [18]. In the presented study, depression and anxiety were found to be high in the female gender and singles. It can be predicted that stress, anxiety and depression levels will be higher after curfews because the restriction of individuals' movements tends to produce or intensify such psychological problems.

In a study conducted on 976 people in Spain, they found that although psychological symptom levels were generally low, those with chronic diseases and young individuals reported more symptoms than the rest of the population [19]. Individuals with chronic diseases are expected to show higher levels of psychological symptoms because COVID-19 tends to be more severely in individuals with multiple comorbidities [17]. According to the age range, older adults are expected to be more psychologically vulnerable to pandemics, while younger adults are expected to protect themselves with an optimistic bias or high health perceptions [20].

Differently, in a study evaluating anxiety disorder, depressive symptoms and sleep quality, stress levels, anxiety and depression symptoms were reported to be significantly higher in young people than in the elderly [21]. In this study, the perceived stress level in young people, women and singles was high. Similarly, the perceived stress level increased in those who did not eat regularly, did not exercise regularly and those who could not spare time for themselves. Doing enough sports during the pandemic period will decrease depression and anxiety [14].

As a result of the study, it was observed that the presence of individuals with COVID-19 disease in their first-degree relative increased the levels of stress, depression and anxiety. Knowing that our loved ones have a potentially fatal disease and not seeing them due to isolation, avoiding physical contact can lead to psychological symptoms deficit [22,23]. As in the general population, psychological symptoms caused by the epidemic are observed in healthcare professionals during the pandemic

period. In a study, the mental health status of approximately 1250 healthcare workers who treated patients with coronavirus pneumonia was examined, and depression was found in 50.4%, anxiety in 44.6% and insomnia in 34.0% of healthcare workers [24].

Consequently, measures taken during the pandemic (increasing handwashing, mask and physical distance) are global public health measures necessary to slow the spread of the virus. Efforts to develop medical treatments for COVID-19 patients continue at full speed. In addition, healthy individuals of the society who stay at home and comply with curfews or go out to work and are in contact with people are also psychologically affected during the pandemic period [16]. As seen at the end of the study, anxiety, depression and stress levels in society are increasing in this process, and health perceptions are affected negatively.

The media can increase negative feelings towards COVID-19 by reporting mixed and often bad results (for example, reporting the number of infected people and deaths). As negative emotions increase, it can be difficult to make the right decisions for health. While general measures are being taken for public health, there is a need to increase the trainings in order to raise public awareness of the subject and alleviate negative emotions, as well as suggestions of behavioral changes. Healthy eating, regular exercise and taking spare time for themselves will increase individuals' perceptions of health, while reducing their anxiety, depression and stress levels. In addition, it is important to identify groups with low-risk perception to prevent the spread of the disease.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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